

CLAIMS

1. A method in a Radio Network Controller, RNC, in a mobile telecommunication system for initiating a Multimedia Broadcast Multimedia Service, MBMS, to a User Equipment, UE, in PMM-idle mode controlled by the RNC, wherein the RNC is connected to a Serving GPRS Support Node, SGSN, the method is **characterised in** that it comprises the steps of:
 - 10 (a)-indicating to the SGSN that the UE transits to the Circuit Switched connected mode,
 - (b)-receiving from the SGSN an MBMS UE context, and
 - (d)-adding MBMS UE context in the RNC to make the RNC aware of that it controls UEs connected to the MBMS.
- 15 2. A method in a Serving GPRS Support Node, SGSN, in a mobile telecommunication system for initiating a Multimedia Broadcast Multimedia Service, MBMS, to a User Equipment, UE, in PMM-idle mode controlled by a Radio Network Controller, RNC, wherein the RNC is connected the SGSN, the method is **characterised in** that it comprises the steps of:
 - 20 (a)-receiving an indication that the UE transits to the Circuit Switched connected mode,
 - (b)-checking with the stored MBMS context information in the SGSN if the UE has activated the MBMS for one or more sessions,
 - (c)-providing the RNC with the MBMS UE context in order to add MBMS UE context in the RNC to make the RNC aware of that it controls UEs connected to the MBMS.
- 25 3. The method according to claim 1, wherein the indicating-step is performed by transmitting a message from the RNC to the SGSN.
- 30 4. The method according to any of claims 1-2, wherein the method comprises the further step of:
-maintaining the UE in PMM-idle state at reception of the indication at the SGSN..

5. The method according to any of claims 1-2, wherein the method comprises the further step of:
 - transferring the UE to PMM-connected state at reception of the indication at the SGSN.
- 10 6. The method according to claim 2, wherein the providing-step is performed by invoking a Iu linking procedure by sending a Iu Linking Request message to the RNC from the SGSN.
7. The method of claim 1, wherein the added MBMS UE context in the RNC is kept in the RNC as long as the UE is RRC connected.
- 15 8. A computer program product directly loadable into the internal memory of a computer within an RNC and/or an SGSN in a mobile telecommunication system, comprising the software code portions for performing the steps of any of claims 1-7.
9. A computer program product stored on a computer usable medium, comprising readable program for causing a computer, within an RNC and/or an SGSN in a mobile telecommunication system, to control an execution of the steps of any of the claims 1-7.
10. A method in Radio Network Controller, RNC, a mobile telecommunication system for initiating a Multimedia Broadcast Multimedia Service, MBMS, to a User Equipment, UE, in PMM-idle state and Circuit Switched connected mode controlled by a Radio Network Controller, RNC, wherein the RNC is connected to a Serving GPRS Support Node, SGSN, the method is **characterised in** that it comprises the steps of:
 - receiving a message from the UE in order to update the MBMS UE context in the RNC for one or more MBMS sessions for which the UE has joined,
 - 25 if there is no MBMS service context stored in the RNC for the concerned MBMSs, the method comprises the further steps of:
 - fetching MBMS service context information from the SGSN,
 - sending the identity of the RNC to the SGSN,
 - creating or updating the MBMS UE context and/or the MBMS Service context in the RNC based on the fetched information from the SGSN,
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otherwise the method comprises the further step of:

-updating the MBMS service context in the RNC.

11. The method according to claim 9, wherein the created or updated MBMS UE context in the RNC is kept in the RNC as long as the UE is RRC connected.

12. The method according to any of the claims 9-10, wherein the method comprises the further step of:

-performing individual paging over Iur or by

-performing Iur linking in order to page a UE that has moved to a second RNC.

13. The method according to any of claims 9-11, wherein the message from the UE to the RNC sent in order to update the MBMS UE context in the RNC for one or more MBMS sessions for which the UE has joined is implemented in a Radio Resource Control, RRC, Connection Request message as a new information field/information element or as a new RRC PDU/message.

14. The method according to claim 9, wherein the method comprises the further step of:

-maintaining the UE in PMM-idle state at reception of the message to the RNC.

15. A computer program product directly loadable into the internal memory of a computer within an RNC in a mobile telecommunication system, comprising the software code portions for performing the steps of any of claims 10-14.

25 16. A computer program product stored on a computer usable medium, comprising readable program for causing a computer, within an RNC in a mobile telecommunication system, to control an execution of the steps of any of the claims 10-14.

17. A Radio Network Controller, RNC, in a mobile telecommunication system for initiating a Multimedia Broadcast Multimedia Service, MBMS, to a User Equipment, UE, in PMM-idle mode controlled by the RNC, wherein the RNC is connected to a Serving GPRS Support Node, SGSN, the RNC is **characterised in** that it comprises means for indicating to the SGSN

that the UE transits to the Circuit Switched connected mode, means for receiving from the SGSN an MBMS UE context, and means for adding MBMS UE context in the RNC to make the RNC aware of that it controls UEs connected to the MBMS.

5 18. A Serving GPRS Support Node, SGSN, in a mobile telecommunication system for initiating a Multimedia Broadcast Multimedia Service, MBMS, to a User Equipment, UE, in PMM-idle mode controlled by a Radio Network Controller, RNC, wherein the RNC is connected the SGSN, the SGSN is **characterised in** that it comprises means for receiving an indication that the UE transits to the Circuit Switched connected mode, means for checking with the stored MBMS context information in the SGSN if the UE has activated the MBMS for one or more sessions, means for providing the RNC with the MBMS UE context in order to add MBMS UE context in the RNC to make the RNC aware of that it controls UEs connected to the MBMS.

10 19. The RNC according to claim 17, wherein the means for indicating comprises further means for transmitting a message to the SGSN.

20 20. The RNC according to claim 17 or the SGSN according to claim 18, wherein the RNC or the SGSN comprises means for maintaining the UE in PMM-idle state at reception of the indication at the SGSN.

25 21. The RNC according to claim 17 or the SGSN according to claim 18, wherein the RNC or the SGSN comprises means for transferring the UE to PMM-connected state at reception of the indication at the SGSN.

22. The SGSN according to claim 18, wherein the means for providing is performed by invoking a Iu linking procedure by sending a Iu Linking Request message to the RNC from the SGSN.

23. The RNC according to claim 17, wherein the added MBMS UE context in the RNC is kept in the RNC as long as the UE is RRC connected.

30 24. A Radio Network Controller, RNC, in a mobile telecommunication system for initiating a Multimedia Broadcast Multimedia Service, MBMS, to a User Equipment, UE, in PMM-idle state and Circuit Switched connected mode controlled by the RNC wherein the RNC is connected to a Serving

GPRS Support Node, SGSN, the RNC is **characterised in** that it comprises:

means for receiving a message from the UE in order to update the MBMS UE context in the RNC for one or more MBMS sessions for which the UE has joined,

5 means for checking if there already are MBMS service contexts established in the RNC for the concerned MBMSs,

if there is no MBMS service context stored in the RNC for the concerned MBMSs, the RNC comprises the further means for fetching MBMS service context information from the SGSN, sending the identity of the RNC to the SGSN, creating or updating the MBMS UE context and/or the MBMS Service context in the RNC based on the fetched information from the SGSN,

10 otherwise the RNC comprises the means for updating the MBMS service context in the RNC.

15 25. The RNC according to claim 24, wherein the RNC comprises means for keeping the created or updated the MBMS UE context in the RNC as long as the UE is RRC connected.

20 26. The RNC according to any of the claims 24-25, wherein the RNC comprises the further means for performing individual paging over Iur or means for performing Iur linking in order to page a UE that has moved to a second RNC.

25 27. The RNC according to any of claims 24-26, wherein the message from the UE to the RNC sent in order to update the MBMS UE context in the RNC for one or more MBMS sessions for which the UE has joined is implemented in a Radio Resource Control, RRC, Connection Request message as a new information field/information element or as a new RRC PDU/message.

30 28. The RNC according to claim 24, wherein the RNC comprises the means for maintaining the UE in PMM-idle state at reception of the message to the RNC.